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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/616,001	07/09/2003	Jacob H. Gunther	51764/3	1037

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EXAMINER
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HAROLD, JEFFEREY F

ART UNIT	PAPER NUMBER
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2644

DATE MAILED: 05/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/616,001

Applicant(s)

GUNTHER, JACOB H.

Examiner

Jefferey F Harold

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 December 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Information Disclosure Statement*

1. The references listed in the Information Disclosure Statement submitted on January 24 and 31, 2005 have been considered by the examiner (see attached PTO-1449).

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. **Claims 1, 2, 11, and 12** are rejected under 35 U.S.C. 102(e) as being anticipated Reilly et al. (United States Patent 6,552,747), hereinafter referenced as Reilly.

Regarding **claim 1**, Reilly discloses a method and system for echo cancellation. In addition, Reilly discloses an echo canceller for reducing echoes resulting from a far-end signal and adaptable during a double-talk event, the echo canceller comprising: an adaptable filter to filter the received far-end signal and provide an echo estimate, and an adaptation module in communication with the adaptable filter to update the adaptable filter, the adaptation module to receive a microphone signal and separate a near-end signal from the microphone signal using a blind source separation algorithm, as

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disclosed at column 4, line 31 through column 6, line 59; column 7, lines 51-57 and exhibited in figures 1-8.

Regarding **claim 2**, Reilly discloses everything claimed as applied above (see claim 1), in addition Reilly discloses, wherein the adaptable filter includes a finite impulse response filter, column 4, line 31 through column 6, line 59; column 7, lines 51-57 and exhibited in figures 1-8.

Regarding **claim 11**, Reilly discloses a method for reducing echoes resulting from a far-end signal, the method comprising: receiving a microphone signal including a near-end signal and echoes, applying a blind source separation algorithm to the microphone signal to separate the near-end signal, updating an adaptable filter based on the echoes, the adaptable filter, filtering the far-end signal to provide an echo estimate, and applying the echo estimate to a microphone signal to substantially remove echoes, as disclosed at column 4, line 31 through column 6, line 59; column 7, lines 51-57 and exhibited in figures 1-8.

Regarding **claim 12**, Reilly discloses everything claimed as applied above (see claim 11), in addition Reilly discloses wherein the adaptable filter comprises a finite impulse response filter, as disclosed column 4, line 31 through column 6, line 59; column 7, lines 51-57 and exhibited in figures 1-8.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. ***Claims 3, 4, 8, 13, 14 and 18-20*** are rejected under 35 U.S.C. 103(a) as being unpatentable over Reilly in view of Jackson, Jr. II et al. (United States Patent 6,151,397), hereinafter referenced as Jackson.

Regarding **claim 3**, Reilly discloses everything claimed as applied above (see claim 1), however, Reilly fails to disclose wherein the echo canceller further includes a preprocessing module in communication with the adaptable filter and adaptation module, the preprocessing module to whiten the far-end signal and decorrelate the microphone signal. However, the examiner maintains that it was well known in the art to provide wherein the echo canceller further includes a preprocessing module in communication with the adaptable filter and adaptation module, the preprocessing module to whiten the far-end signal and decorrelate the microphone signal, as taught by Jackson.

In addition, addition Jackson discloses wherein the echo canceller further includes a preprocessing module in communication with the adaptable filter and adaptation module, the preprocessing module to whiten the far-end signal and decorrelate the microphone signal, as disclosed at column 7, line 34 through column 12, line 26 and exhibited in figures 5-8.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Reilly by specifically providing wherein the echo canceller further includes a preprocessing module in communication with the adaptable filter and adaptation module, the preprocessing module to whiten the far-end signal and decorrelate the microphone signal, as taught by Jackson, for the purpose of recovering the transmitted/intended signal.

Regarding **claim 4**, Reilly discloses everything claimed as applied above (see claim 1), however, Reilly fails to disclose wherein the preprocessing module includes, a first decorrelator to receive and whiten the far end signal, and a second decorrelator to receive and decorrelate the microphone signal. However, the examiner maintains that it was well known in the art to provide wherein the preprocessing module includes, a first decorrelator to receive and whiten the far end signal, and a second decorrelator to receive and decorrelate the microphone signal, as taught by Jackson.

In addition Jackson discloses, wherein the preprocessing module includes, a first decorrelator to receive and whiten the far end signal, and a second decorrelator to receive and decorrelate the microphone signal, as disclosed at column 7, line 34 through column 12, line 26 and exhibited in figures 5-8.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Reilly by specifically providing wherein the preprocessing module includes, a first decorrelator to receive and whiten the far end signal, and a second decorrelator to receive and decorrelate the microphone signal, as taught by Jackson, for the purpose of recovering the transmitted/intended signal.

Regarding **claim 8**, Reilly and Jackson discloses everything claimed as applied above (see claim 3), however, the combination fails to disclose wherein the preprocessing module maximizes a criterion of measure to increase the statistical independence of the near-end signal from the far-end signal. However, the examiner maintains that it was well known in the art to provide wherein the preprocessing module maximizes a criterion of measure to increase the statistical independence of the near-end signal from the far-end signal, as taught by Jackson.

In addition Jackson discloses, wherein the preprocessing module maximizes a criterion of measure to increase the statistical independence of the near-end signal from the far-end signal, as disclosed at column 7, line 34 through column 12, line 26 and exhibited in figures 5-8.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the combination by specifically providing wherein the preprocessing module maximizes a criterion of measure to increase the statistical independence of the near-end signal from the far-end signal, as taught by Jackson, for the purpose of recovering the transmitted/intended signal.

Regarding **claim 13**, Reilly discloses everything claimed as applied above (see claim 11), however, Reilly fails to disclose whitening the far-signal; and decorrelating the microphone signal from the far-end signal. However, the examiner maintains that it was well known in the art to provide whitening the far-signal; and decorrelating the microphone signal from the far-end signal, as taught by Jackson.

In addition Jackson discloses whitening the far-signal; and decorrelating the microphone signal from the far-end signal, as disclosed at column 7, line 34 through column 12, line 26 and exhibited in figures 5-8.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Reilly by specifically providing whitening the far-signal; and decorrelating the microphone signal from the far-end signal, as taught by Jackson, for the purpose of recovering the transmitted/intended signal.

Regarding **claim 14**, Reilly and Jackson discloses everything claimed as applied above (see claim 13), however, the combination fails to disclose wherein whitening the far-end signal is performed by a first decorrelator and decorrelating the microphone signal is performed by a second decorrelator. However, the examiner maintains that it was well known in the art to provide wherein whitening the far-end signal is performed by a first decorrelator and decorrelating the microphone signal is performed by a second decorrelator, as taught by Jackson.

In addition Jackson discloses wherein whitening the far-end signal is performed by a first decorrelator and decorrelating the microphone signal is performed by a second decorrelator, as disclosed at column 7, line 34 through column 12, line 26 and exhibited in figures 5-8.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the combination by specifically providing wherein whitening the far-end signal is performed by a first decorrelator and decorrelating the



microphone signal is performed by a second decorrelator, as taught by Jackson, for the purpose of recovering the transmitted/intended signal.

Regarding **claim 18**, Reilly discloses an echo canceller for receiving a microphone signal including a near-end signal and echoes resulting from a far-end signal, the echo canceller reducing the echoes and adaptable during a double-talk event, the echo canceller comprising: an adaptable filter to filter the whitened far-end signal and provide an echo estimate, and an adaptation module to update the adaptable filter and to receive the decorrelated microphone signal and separate the near-end signal from the microphone signal using a blind source separation algorithm, as disclosed column 4, line 31 through column 6, line 59; column 7, lines 51-57 and exhibited in figures 1-8, however, Reilly fails to disclose a preprocessing module to whiten the far-end signal and reduce signal correlation in the microphone signal, and a blind source separation module, in communication with the preprocessing module. However, the examiner maintains that it was well known in the art to provide a preprocessing module to whiten the far-end signal and reduce signal correlation in the microphone signal, and a blind source separation module, in communication with the preprocessing module, as taught by Jackson.

In addition Jackson a preprocessing module to whiten the far-end signal and reduce signal correlation in the microphone signal, and a blind source separation module, in communication with the preprocessing module, as disclosed at column 7, line 34 through column 12, line 26 and exhibited in figures 5-8.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Reilly by specifically providing a preprocessing module to whiten the far-end signal and reduce signal correlation in the microphone signal, and a blind source separation module, in communication with the preprocessing module, as taught by Jackson, for the purpose of recovering the transmitted/intended signal.

Regarding **claim 19**, Reilly and Jackson discloses everything claimed as applied above (see claim 18), in addition Reilly discloses wherein the adaptable filter includes a finite impulse response filter, as disclosed at column 4, line 31 through column 6, line 59; column 7, lines 51-57 and exhibited in figures 1-8.

Regarding **claim 20**, Reilly and Jackson discloses everything claimed as applied above (see claim 18), however, the combination fails to disclose discloses wherein the preprocessing module includes, a first decorrelator to receive and whiten the far end signal, and a second decorrelator to receive and decorrelate the microphone signal. However, the examiner maintains that it was well known in the art to provide discloses wherein the preprocessing module includes, a first decorrelator to receive and whiten the far end signal, and a second decorrelator to receive and decorrelate the microphone signal, as taught by Jackson.

In addition Jackson discloses wherein the preprocessing module includes, a first decorrelator to receive and whiten the far end signal, and a second decorrelator to receive and decorrelate the microphone signal, as disclosed at column 7, line 34 through column 12, line 26 and exhibited in figures 5-8.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the combination by specifically providing discloses wherein the preprocessing module includes, a first decorrelator to receive and whiten the far end signal, and a second decorrelator to receive and decorrelate the microphone signal, as taught by Jackson, for the purpose of recovering the transmitted/intended signal.

4. **Claims 5, 15, and 21** are rejected under 35 U.S.C. 103(a) as being unpatentable over Reilly in view of Jackson and further in view of well know prior art (MPEP 2144.03).

Regarding **claim 5**, Reilly and Jackson disclose everything claimed, as applied above, (see claim 3), however, the combination fails to disclose a recursive least-squares structure. However, the examiner takes official notice of the fact that it was well know in the art to provide a recursive least-squares structure.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the combination by specifically providing a recursive least-squares structure, for the purpose of reducing the computation required for echo cancellation.

Regarding **claims 15 and 21**, the combination discloses everything claimed as applied above (see claims 13 and 18 respectively), in addition claims 15 and 21 are interpreted and thus rejected for the reasons set forth above in the rejection of claim 5.

***Allowable Subject Matter***

5. ***Claims 6-10, 16, 17, 22 and 23*** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Response to Arguments***

6. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jefferey F Harold whose telephone number is 571-272-7519. The examiner can normally be reached on Monday - Friday 9 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh H Tran can be reached on 571-272-7564. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



JFH  
April 27, 2005



Jefferey F Harold  
Examiner  
Art Unit 2644